

# Update on Expert Groups On-going and planned activities

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9<sup>th</sup> Grid Connection European Stakeholder  
Committee Meeting

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# Expert Groups

- High Penetration
  - Cost Benefit Analysis
  - Compliance Monitoring
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# EG on high penetration 1/4

- Total 13 members
- Stakeholder groups represented in EG:  
Wind manufacturing industry (4), HVDC manufacturing industry (2), PV inverter manufacturing industry (1), power system analysis tool providers & consultants (2), academia (2), system operators (2)
- Phase 1 from December 2016 until end of January 2017 (finished):  
Substantially reviewed existing IGD on “Fast Fault Current Contribution”  
Created first version of IGD on “High penetration of Power Electronics interfaced Power Sources” (HPoPEiPS)
- Phase 2 from March 2017:  
Further improve understanding of “grid forming” features, set up scenarios which features supports which the system need.

Release draft report for consultation end of 2018.

# EG on high penetration 2/4

## Work plan in phase 2 (2017)

- **“Holistic” approach from IGD**
- **Separated into six topics**
  - “Create system voltage”
  - “Contribute to fault level”
  - “Sink for harmonics & unbalances”
  - “Contribute to inertia”
  - “First cycle survival/emergency support”
  - “Prevent adverse controller interactions”
- **High level description of each topic regarding**
  - Description of expected performance
  - Studies for validation
  - Testing methods
  - HW/SW changes with respect to today’s equipment
  - What is achievable by <1%, 5%, 25%
  - Impact on CAPEX/OPEX

# EG on high penetration 3/4

## Bilateral meeting with active stakeholder group

- Goal: To ensure a joint way forward
- Feedback on the work within EG
- ENTSO-E presented proposals for improved transparency
- Members represent both individual companies and association
- High demand for alignment within association
- Implementation of grid forming capabilities may be costly and time consuming

# EG on high penetration 4/4

## Work plan 2018

- Create technical report
- Further work on details on 6 topics
- Present intermediate results in conferences
- *Update terms of references of EG HP*
- Liaise with GB Expert Group and check R&D projects if exchange might be useful
- Final report to be published either
  - as updated IGD aligned with all stakeholder groups (full transparency about changes)
  - as individual report with logos from all companies/organisations and updated IGD refers to this report
- Physical meeting took place 05 March
- Continuous webinars (on usually three-weekly basis)
- Maybe additional physical meetings in sub-groups to work on the report
  - High-level draft before summer break
  - Draft report for consultation until end of 2018

# EG on Cost Benefit Analysis

- Total 18 members
- Stakeholder groups represented in EG:  
manufacturers and generation (8), regulators (1), system operators (4), industrial consumers (1), storage (1), network operators (3)
- Kick-off: 18/05/2017
- Timing: 6 months
- Target: To further develop the IGD on cost benefit analysis to meet reasonable stakeholder expectations
- Consultation of the draft IGD: [29/01/2018 – 02/03/2018](#)
  - Received three official replies: VGB, EDF, Energiföretagen Sverige – Swedenergy

## Next steps:

- Discuss the consultation feedback with the EG
- Finalize the IGD and publish it during the third week of March.

# EG on compliance monitoring (EG CM)

- Total ≈ 25 experts from 22 companies
  - Stakeholder groups represented in EG: Turbine manufacturing industry, wind manufacturing industry, co-generation industry, engineering and certification bodies, utility companies, energy suppliers, DSO association, consultant companies, standardization entities,...
- (members to be regrouped and list to be refined)*
- Next steps:
    - ENTSO-E had a call with CENELEC TC8X WG3 representatives to jointly work on the topic of Compliance Monitoring
    - The joint team will be CENELEC/WG3 and ENTSO-E/EG CM
    - ENTSO-E could provide the workspace if agreed
    - Input material: EN50549-10 report and IGD on Compliance Monitoring
    - ToRs of this work to be discussed and agreed
    - First call: planned for third/fourth week of April



# IGDs update

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# Status of IGDs since last GC ESC

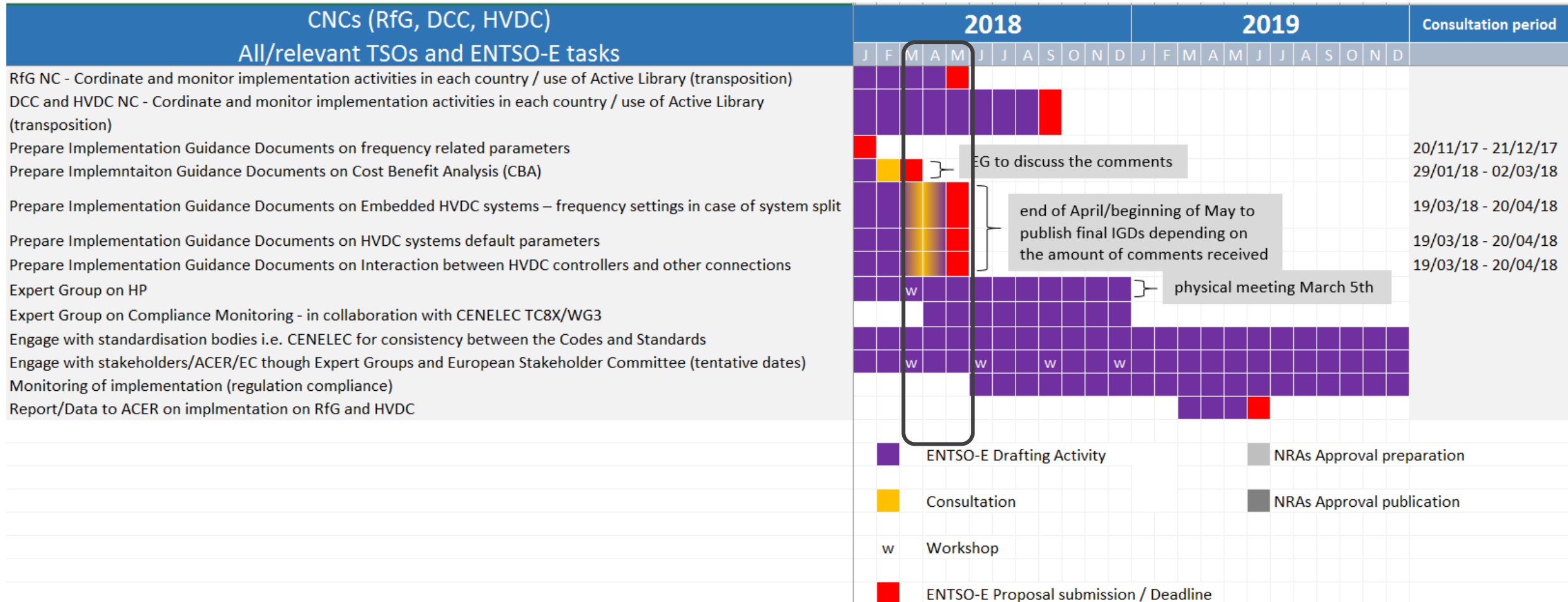
- Frequency related IGDs **published** [https://electricity.network-codes.eu/network\\_codes/cnc/cnc-igds/](https://electricity.network-codes.eu/network_codes/cnc/cnc-igds/)
  - Frequency Sensitive Mode
  - Limited Frequency Sensitive Mode
  - Demand Response – System Frequency Control
  - Frequency Ranges
  - Maximum Admissible active power reduction at low frequencies
  - Automatic (re-)connection and rate of change of active power
  - Rate-of-change-of-frequency withstand capability (RoCoF)
  - Need for synthetic inertia for frequency regulation
- CBA IGD to be published during the third week of March
- New IGDs to be submitted for internal approval and launched for consultation by third week of March:
  - Embedded HVDC systems – frequency schemes in case of system split
  - Interactions between HVDC systems and other connections
  - HVDC systems default parameters



# Overview

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# Overview plan for next months



Consultation of the report from EG HP by end of 2018 is not included in the above plan